The Acoustic Nucleus and the Interolivary Tract.—Freud has examined the medulla of fœtuses of 5–6 months' age, under Meynert's direction. At this time the acoustic fibres are medullated. He finds that the acoustic roots lie in a row from without inward, and end wholly in gray nuclei of the side on which they enter. The outer fibres end in the anterior nucleus, the middle fibres and a portion of the inner fibres end in the inner nucleus, the remainder of the inner fibres turn about and pass to the outer nucleus. From these nuclei new fibres arise. There is a bundle from the anterior to the inner nucleus. There are arched bundles from the inner nucleus to the decussation in the nucleus tegmenti of the cerebellum. There are fibræ arcuatæ between the inner nuclei which pass through the facial nucleus, and between the outer nuclei which pass through the area lying ventral of the former. There are bundles issuing from the anterior nuclei, and these make up the corp. trapezoides and pass through the upper olivary nucleus. After crossing the median line they turn downward into the interolivary tract. At this time there are no fibres to be found above the corp. trapezoides which correspond to the interolivary fibres in their stage of development; at the level of the decussation of the corp. trapezoides the interolivary tract begins; no other continuation of this bundle can be found; hence Freud concludes that the two tracts are continuous. But since the interolivary tract passes to the opposite posterior columns, this tract connects these columns with the anterior acoustic nucleus. The other constituents of the interolivary tract (lemniscal fibres) are not developed at this age. This conclusion agrees with the observation of Vejas, that after extirpation of the posterior column of one side an atrophy could be traced as high as the corp. trapezoides in the interolivary tract, but no higher (see Periscope, Jan., 1885).—*Neurologisches Centralblatt*, June 15, 1885.

The Tracts in the Spinal Cord.—Homén of Helsingfors has experimented upon dogs to determine the direction, time, and exact character of degenerative changes in the tracts of the spinal cord. By using Weigert's methods of staining with fuchsin and hematoxylin it is possible to distinguish the changes occurring in the axis-cylinder from those due to degeneration of the myelin or of the connective tissue. Homén finds that in all cases the primary change after section of the cord consists in a granular degeneration of the axis-cylinder. The axis-cylinder appears as a granular light-yellow mass, while the myelin is intact and is surrounded by the normally stained blue erythrophile ring. Later the cylinder becomes swollen, the space between it and the colored ring becomes less; the myelin is involved in the degeneration, and the two cannot be distinguished from one another. Lastly the appearance of Deiters' cells indicates the participation of the connective tissue and the terminal stage of the process.

Homén finds distinct evidence of the beginning degeneration in the axis-cylinders three to five days after the operation of cutting the cord. He distinguishes the true secondary degeneration from the traumatic degeneration which occurs near the point of section, by the presence in the latter of shining masses of exudation which do not absorb the staining material.

The various tracts do not degenerate simultaneously. The process begins in the posterior columns, and attacks their entire longitudinal extent from the first; later, the lateral column and anterior median column are affected, and last of all the direct cerebellar column. The column of Clarke was thought to be somewhat smaller, the number of fine fibres being decreased, and the number of cells being reduced, in one case in which the operation was unilateral. A comparison of these experimental results, with the observations upon a number of human cords in which degenerations had occurred, has convinced Homén that the process is the same in both. If this is so, his conclusions as to the time, order of progression, and exact histological changes in degeneration are valuable, and should lead to an examination for secondary degenerations, in recent as well as old cases of spinal-cord disease.—*Fortschritte der Medicin*, 1885, No. 9.

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b.—PHYSIOLOGY OF THE NERVOUS SYSTEM.

THE CONDUCTION OF EFFECTS OF IRRITATION FROM THE CEREBRUM TO THE EXTREMITIES.—Dr. Lewaschew has made a series of experiments upon this subject. He has not studied the effects upon the movements on the opposite side, but those on the same side as the irritation. All the experiments were made upon dogs under morphia, or morphia and chloral, with the induction current applied to the cerebral cortex. The movements of the posterior extremities were observed. If the cortex of the left hemisphere is irritated, then the weakest current calls out movement in the right extremity. By stronger currents the opposite posterior extremity is also moved. The inquiry arose, by what paths of conduction in the spinal cord was the irritation conveyed to the extremity on the same side as the irritation? In a dog, after both hemispheres were laid bare in the vicinity of the sulcus cruciatus, the spinal cord was hemisected on the left side at the level of the eleventh dorsal vertebra, so that the path of conduction only remained by the right half of the spinal cord. If, under these circumstances, the centre for the posterior extremity in the left hemisphere was irritated, then the result for both posterior extremities is the same. Hence the conclusion that the conduction from a hemisphere to the posterior extremity on the same side is not accomplished by conduction in the half of the spinal cord of the same side. Both posterior extremities have their primary centres in the lumbar part of the spinal cord. The